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ABSTRACT

This document presents the second edition of the World-of-Work map. The World-of-Work map is described as a depiction of important similarities and differences among occupations using J. L. Holland's hexagon, which shows relationships among six types of occupations (realistic, investigative, artistic, social, enterprising, and conventional). The World-of-Work map provides alternatives to Holland's terms (technical, science, arts, social service, business contact, and business operations). The map also depicts 23 job families from the Dictionary of Occupational Titles which are focused on four basic task dimensions: working with data, ideas, people, and things. Methods of using the World-of-Work map are discussed including using the Occupations Finders list to look up a group of occupations, using the counselee's three letter code to look up job families on the map, and looking at similar jobs in the family of the job the counselee already has. The mapping of interests to a map region is described. References, Holland's hexagon, the World-of-Work map, and a diagram illustrating mapping a code onto the map are included. (ABL)

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The World-of-Work Map: Rationale and "Do-It-Yourself" Applications[1]

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Abstract

This paper describes the World-of-Work Map (2nd Edition), its basis in theory and research, and its applications in career counseling. Emphasis is placed on do-it-yourself procedures for using the map with counselees. To this end, locally reproducible materials are illustrated. The World-of-Work Map, which has Holland's hexagon as its core, shows the locations of 23 job families on two basic work task dimensions—working with data vs. ideas and working with people vs. things. Together, the 23 job families cover over 95% of the U.S. labor force. A graphic procedure for finding a counselee's map region is illustrated. The procedure, which is compatible with scores from a wide variety of assessment instruments, can help counselees identify and explore their occupational options. Other applications are described.

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[1]Materials distributed for a program titled "Tools for Putting Counselees on the (World-of-Work) Map"; International Collaborative Conference on Careers; March 1986; Miami, Fla.

The World-of-Work Map: Rationale and "Do-It-Yourself" Applications[1]

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The title of this paper pretty well summarizes its purposes. First, we will take a brief look at the basis of the World-of-Work Map in theory and research. Then we will see how it can be used--how you can "put counselees on the map" and help them explore their career options. You will receive several handouts that can be reproduced and immediately applied. In a separate presentation, JoAnn Bowlsbey will illustrate how the World-of-Work Map is integrated into a computer-based career planning system called "DISCOVER."

Rationale

Holland's Hexagon

In essence, the World-of-Work Map is a way to depict important similarities and differences among occupations—and to link counselees characteristics to those occupations. It uses, as a point of departure, the arrangements of occupations and interests proposed in the vocational theories of Ann Roe (Roe & Klos, 1969) and John Holland (1973, 1985). Roe arranges eight groups of occupations according to a circle while Holland arranges six groups of occupations according to a hexagon. Both arrangements of occupations are two-dimensional--like a map. Because the World-of-Work Map is most directly related to Holland's hexagon, the hexagon warrants further discussion before we look at the map.

First introduced over 15 years ago by Holland, Whitney, Cole, and Richards (1969), the Holland's hexagon (Figure 1) depicts similarities and differences among Holland's (1985) six types of vocational personalities and work environments (e.g., occupations). Social (S) occupations, for example, are most similar to (closest to) Artistic (A) and Enterprising (E) occupations. They are least similar to Realistic (R) occupa-tions, which are on the other side of the hexagon. Similarity to Conventional (C) and Investigative (I) occupations is intermediate. In general, distances between the six types of occupations on the hexagon indicate degree of similarity.

[1]Paper presented as part of a program titled "Tools for Putting Counselees on the (World-of-Work) Map" at the International Collaborative Conference on Careers; March 1986; Miami, Florida. An earlier edition of this paper appeared in the Fall, 1985 issue of the New Jersey Career Counselor Association Review.

Insert Figure 1 about here.

Although Holland's theory of careers has generated considerable research and writing, the hexagon has remained in skeletal form over the years. It shows similarities and differences among occupations--but only among six general types of occupations. Given the 12,099 unique occupations identified by the U.S. Department of Labor (1977), more than six types are needed to portray similarities and differences.

Holland (1985, pp. 182-188) identifies 71 groups of occupations on the basis of their three predominant types ("3-letter codes"). Occupations in the ISA group, for example, are characterized by Investigative, Social, and Artistic work environments, in that order. Although the ISA group is among the I-type occupations on the hexagon, it and the other 3-letter code groups exist only on lists. Thus, the Holland's hexagon shows where I-type occupations are located, but not ISAs, ICRs, IREs, or the other 68 occupational groups identified by Holland.

World-of-Work Map

If the hexagon depicts similarities and differences among occupations, why must the occupations be limited to only six general types? The World-of-Work Map is one way to address this limitation. As shown in Figure 2, Holland's hexagon forms the core of the map. Superimposed on the hexagon are the two basic work task dimensions (working with data vs. ideas; working with people vs. things) suggested by theory and shown by research to underly the two-dimensional hexagon (Prediger, 1981, 1982). Holland's six types and alternative titles appear on the periphery of the map. Arrows by the alternative titles indicate that the types blend together rather than exist as discrete points. For this reason, the map is rounded rather than hexagonal.

Insert Figure 2 about here.

The body of the World-of-Work Map shows the locations of 23 job families (groups of similar occupations) that encompass all 12,099 occupations recognized by the U.S. Department of Labor (1977) in the 4th edition Dictionary of Occupational Titles (DOT). Job family names and locations suggest differences in the work that is done and the people who do it.

Each job family's map location is based on the work tasks typical of occupations in that family. Data tasks are impersonal tasks involving procedures and transactions that expedite goods/services consumption by people (for example, by organizing, recording, verifying, or transmitting facts, numbers, instructions, etc.). Ideas tasks are intrapersonal tasks involving insights, theories, and new ways of expressing something with, for example, words, paint, equations, or music. People tasks are interpersonal tasks such as caring for, educating, entertaining, serving, persuading, or directing others. Things tasks are nonpersonal tasks involving machines, tools, living

things, and materials such as food, wood, or metal. Although any occupation will involve some work with data, ideas, people, and things, only one or two of the work tasks typically predominate.

The relationship between the four work tasks and Holland's types, shown on the periphery of the map, appears to make good sense. For example, E-type (Business Contact) occupations are located at the upper left. Data work tasks and, to some extent, people work tasks predominate. I-type (Science) occupations are located at the lower right. Ideas work tasks, and to some extent, things work tasks predominate--and so on.

A considerable amount of empirical data were used to determine the content of the job families and their locations on the World-of-Work Map. The first edition of the map was based on Department of Labor job analysis ratings for the 13,800 unique occupations in the 3rd edition DOT and mean interest scores (expressed as work task preferences) for 110,000 persons in 570 occupational groups (Prediger, 1976). Revisions leading to the current edition (shown in Figure 2) were based on Department of Labor job analysis ratings for the 12,099 unique occupations in the 4th edition DOT and mean interest scores for 421 additional educational and occupational groups (ACT, 1984). In grouping occupations into job families, similarity of job analysis ratings and similarity of workers' interest scores were given primary consideration. Purpose of work and work setting were also considered.

As one would expect, given the real-world information on which the map is based, job family locations generally make good sense. For example, "up North" (where data-related work tasks predominate), we have the Records and Communications Job Family. Among the occupations included are office, library, and hotel clerks; receptionists; computer tape librarians; office, medical, and legal secretaries; court reporters; and medical record technicians (ACT, 1984). In the Northwest (Region 2 of the map), we have the Marketing and Sales Job Family and the Personal/Customer Services Job Family. These job families include occupations that primarily involve working with data and people. Job families for which ideas work tasks predominate (e.g., Social Sciences, Natural Sciences and Mathematics) are located in the South--and so on.

The distance of a job family from the center of the map indicates the clarity with which a job family's work tasks are defined, as shown by research. As an indicator of clarity, distance combines aspects of the consistency and differentiation concepts in Holland's (1985) theory of careers. Zero clarity (the exact center of the map) indicates undifferentiated work tasks (a "flat" work task profile). High clarity, on the other hand, indicates that one or two of the four work tasks clearly predominate (work tasks are differentiated) and that the predominant work tasks are consistent with each other (i.e., they are <u>not</u> on opposite sides of the hexagon).

Thus, a job family's location on the World-of-Work Map shows which work tasks predominate (region) and their clarity (distance). Compare, for example, the Marketing and Sales Job Family (e.g., insurance agents, medical supply sales workers), and the Personal/Customer Services Job Family (e.g., bellhops, waiters/waitresses). The job families are both located in Region 2 (data and people work tasks) but have different levels of clarity.

Although the World-of-Work Map shows similarities and differences among a variety of occupational groups, there is more to the work world than can be drawn on a flat piece of paper--a map or a hexagon. The World-of-Work Map simply provides an overview of major "landmarks" (job families) and "climates" (work tasks) in various regions of the work world. Nevertheless, the map can give counselees a general sense of direction as they explore their career options.

Applications

3-Letter Codes

An "occupational map" based on Holland's types was suggested some 15 years ago by Cole, Whitney, and Holland (1971). However, Holland's occupational groups (each with a 3-letter code) continue to exist only on lists. These lists are used to link a counselee's interest inventory scores to occupational options. By completing an inventory that assesses Holland's types (e.g., the Self-Directed Search), counselees find their three highest scores (3-letter code). They then use a list (e.g., the "Occupations Finder," Holland, 1985) to look up the group of occupations with their 3-letter code and various combinations of the letters.

There appear to be two major limitations to the list-look-up approach to career exploration. First, the groups of occupations do not have titles other than 3-letter codes. Second, the occupations in a group tend to be diverse (e.g., foresters, electricians, jewelers, power-plant operators, cooks, and welders are all in the RIS group). With titles such as RIS, SRI, ISA, etc., similarities and differences among 71 groups of diverse occupations are difficult to comprehend. Hence, the list-look-up procedure can be a rote exercise that gives counselees little understanding of similarities and differences among occupations, how the world of work is organized, or where they may fit in.

World-of-Work Map

The World-of-Work Map provides a different way to link a counselee's interests with occupational options. As described below, a counselee's 3-letter code is translated to 1 of 12 regions on the map, and the counselee is encouraged to look into job families in that region and the regions on either side. The data/ideas and people/things dimensions provide perspective on what work is like in the various map regions.

A third important world-of-work dimension--preparation level--is presented in the "Job Family Charts" which accompany the map. The "Charts" list 500 occupations by preparation level, map region, and job family. Together, these occupations employ more than 95% of the labor force. For each, an Occupational Outlook Handbook page reference is listed and examples of related high school courses and post high school programs/majors are provided. (Note: The Job Family Charts, a worksheet version of the World-of-Work Map, and a "Counselor's Guide" will be provided as handouts.)

Two formulas based on the geometry of a hexagon were used to develop a table with map regions for all possible 3-letter codes. The table, which appears on page 2 of the "Counselor's Guide" handout, can be used with any interest inventory reporting scores for Holland's types. One simply determines a counselee's 3-letter code, finds the code in the table, and notes the corresponding map region (and those on either side). A counselee with an ESC code (Region 2), for example, might wish to look into job families in Regions 1, 2, and 3--e.g., Marketing and Sales; Social and Government Services; Management and Planning. Readers can judge whether these are appropriate job families for someone with E-type (Business Contact), S-type (Social Service), and C-type (Business Operations) interests.

Mapping a counselee's interests. Although the table of map regions is easy to use, some counselees want to see how one obtains a map region from their interest inventory scores. The procedure, which has been described for professionals (Prediger, 1981), is not easily explained to counselees. Fortunately, Miller (1985) has developed a simple graphic procedure for approximating the regions obtained from the formulas. A 3-step adaptation of Miller's procedure is described at the bottom of Figure 2.

Suppose, for example, a counselee has a 3-letter code of ISA. To map the code, start at the center of the map--a position that is neutral with respect to Holland's six types and the four work tasks. Since the counselee's highest interest score is for the I-type, draw a line to that type on the map (see Figure 3). Then draw a line from the I-type toward the dot for the S-type.

Insert Figure 3 about here.

This line segment should be half as long as the first line in order to approximate the influence of the second highest score. (Figure 2 describes an easy way to determine line lengths.) Finally, continue the line toward the A-type. This line segment should be half as long as the second segment in order to approximate the influence of the third highest score.

As shown by Figure 3, the broken line representing the ISA code ends in Region 10. Hence, the counselee would be encouraged to look into job families in Regions 9, 10, 11--where ideas work tasks (relevant to Types I and A) and, to a lesser extent, people work tasks (relevant to Types S and A) predominate.

The procedure for mapping a 3-letter code and the for-mulas cited above almost always result in the same region. When there is disagreement, the two procedures produce adjacent regions. The advantage of mapping is that counselees can see how their map locations are influenced by each of their scores. When a counselee's highest interest scores are similar or tied, counselors may wish to map various combinations of letters in the 3-letter code. (Note: If time permits, members of the audience will be asked to "map" other 3-letter codes. Results will be shared and discussed.)

Other Applications. Because the World-of-Work Map is based on the work tasks underlying Holland's hexagon rather than Holland's types, tests and inventories need not directly assess the types in order to "put counselees on the map." For example, work task definitions (Prediger, 1981) and correlational analyses have been used to determine map regions in line with Kuder General Interest Survey scales and Ohio Vocational Interest Survey scales (ACT, 1984). Results are summarized on page 3 of the "Counselor's Guide" handout. The "Counselor's Guide" also makes it possible to find map regions in line with a counselee's career-related abilities.

Another way to "put counselees on the map" is through their preferred (or actual) occupations. Because the job families encompass the work world, each occupational preference can be associated with a job family (e.g., through use of the Job Family Charts). Once the appropriate job family is identified, its location on the map can be found. Because similar work tasks are involved, counselees may wish to consider other occupations in their job families and those nearby.

If interest scores are available, counselors can determine the congruence between a counselee's preferred occupation and measured interests. The distance (in map regions) between the region based on preferred occupation and the region based on interests provides a congruence index that ranges from zero (perfect agreement) to six (no agreement--i.e., interests and occupation are on opposite sides of the hexagon). The congruence index can also be used to compare results for two or more interest inventories or to compare interests and abilities. Research applications are discussed elsewhere (Prediger, 1982).

Toward a Well-Rounded Hexagon

In summary, the World-of-Work Map uses Holland's hexagon as the framework for a simple, yet comprehensive, overview of a work world comprising thousands of different occupations; it helps counselees view personal characteristics in world-of-work terms; and it provides counselors with a tool for com-municating similarities and differences among occupations. Fleshed out, the hexagon appears to be well-rounded and healthier than ever.

References

American College Testing Program. (1984). Vocational Interest, Experience, and Skill Assessment: User's handbook (Revised 2nd ed.). Iowa City, IA: Author.

Cole, N. S., Whitney, D. R., & Holland, J. L. (1971). A spatial configuration of occupations. Journal of Vocational Behavior, 1, 1-9.

Holland, J. L. (1985). Making vocational choices (2nd ed.). Englewood Cliffs, NJ: Prentice-Hall.

Holland, J. L. (1973). Making vocational choices. Englewood Cliffs, NJ: Prentice-Hall.

Holland, J. L., Whitney, D. R., Cole, N. S., & Richards, J. M., Jr. (1969). An empirical occupational classification derived from a theory of personality and intended for practice and research (ACT Research Report No. 29). Iowa City, IA: American College Testing Program.

Miller, M. J. (1985). Counseling Region 99 clients. Journal of Employment Counseling. 22, 70-77.

Prediger, D. J. (1976). A world-of-work map for career exploration. Vocational Guidance Quarterly, 24, 198-208.

Prediger, D. J. (1981). Mapping occupations and interests: A graphic aid for vocational guidance and research. Vocational Guidance Quarterly, 30, 21-36.

Prediger, D. J. (1982). Dimensions underlying Holland's hexagon: Missing link between interests and occupations? Journal of Vocational Behavior, 21, 259-287.

Roe, A. & Klos, D. (1969). Occupational classification. Counseling Psychologist. 1(3), 84-92.

U.S. Department of Labor. (1977). Dictionary of occupational titles (4th ed.). Washington, DC: U.S. Government Printing Office.

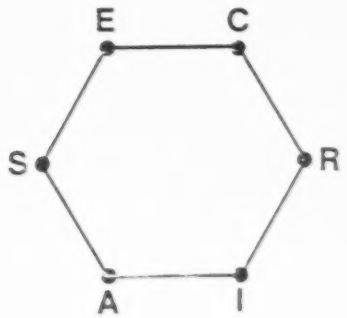
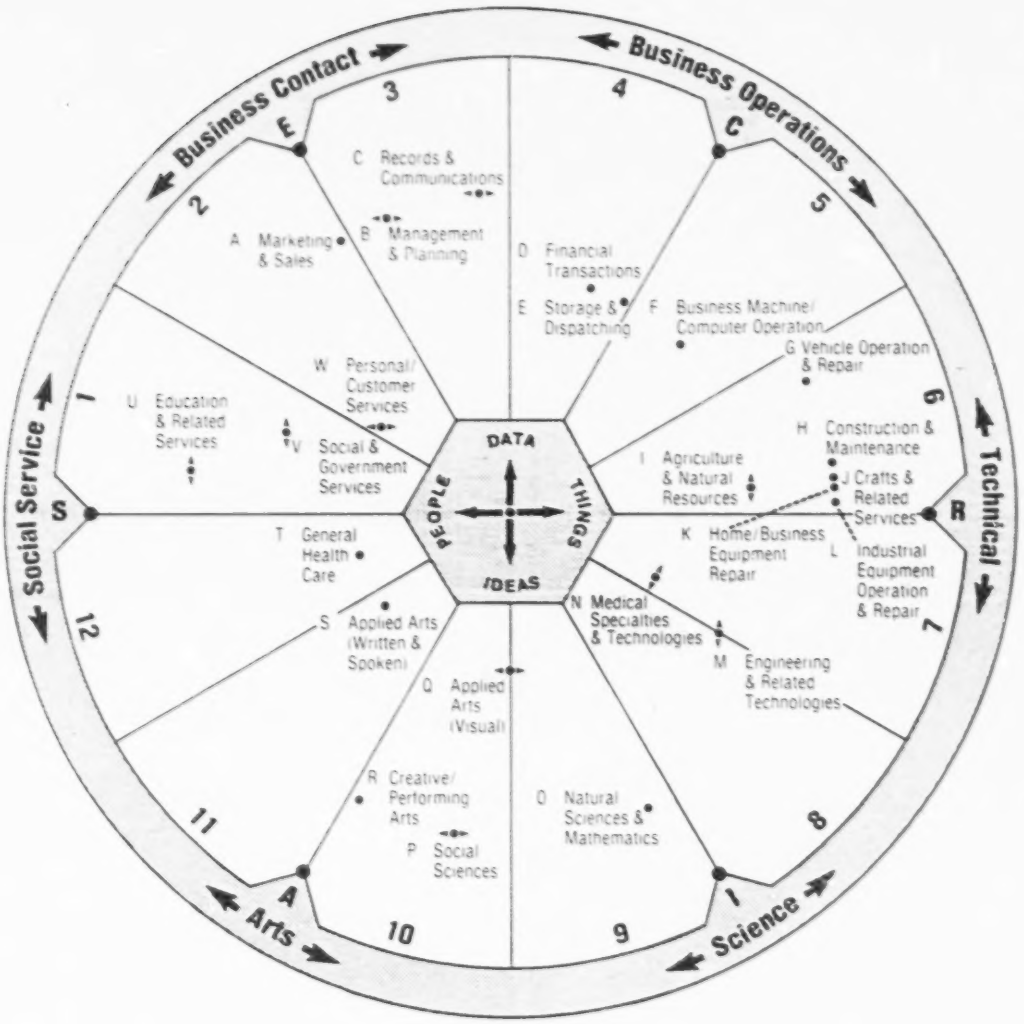


Figure 1. Holland's hexagon and occupational types.

Holland's types	Alternative titles and descriptions
R (Realistic)	Technical. Working with tools, instruments, and mechanical or electrical equipment. Activities include designing, building, and repairing machinery and raising crops/animals.
I (Investigative)	Science. Investigating and attempting to understand phenomena in the natural sciences through reading, research, and discussion.
A (Artistic)	Arts. Expressing oneself through activities such as painting, designing, singing, dancing, and writing; artistic appreciation of such activities (e.g., listening to music, reading literature).
S (Social)	Social Service. Helping, enlightening, or serving others through activities such as teaching, counseling, working in service-oriented organizations, and engaging in social/political studies.
E (Enterprising)	Business Contact. Persuading, influencing, directing, or motivating others through activities such as sales, supervision, and aspects of business management.
C (Conventional)	Business Operations. Developing and/or maintaining accurate and orderly files, records, accounts, etc.; designing and/or following systematic procedures for performing business activities.

Figure 1a. Alternative titles and descriptions for Holland's types.

WORLD-OF-WORK MAP
(2nd Edition)



About the Map

- The World-of-Work Map arranges job families (groups of similar jobs) into 12 regions. Together, the job families cover all U.S. jobs. Although the jobs in a family differ in their locations, most are located near the point shown.
- A job family's location is based on its primary work tasks—working with DATA, IDEAS, PEOPLE, and THINGS. Arrows show that work tasks often heavily involve both PEOPLE and THINGS (◄●►) or DATA and IDEAS (▲ ▼).
- Six general areas of the work world and related Holland types are indicated around the edge of the map. Job Family Charts (available from ACT) list over 500 occupations by general area, job family, and preparation level. They cover more than 95% of the labor force.

How to Use the Map with Counselees

1st. Find counselee's 3 highest scores on an interest inventory reporting results based on Holland's six types. Mark "1st," "2nd," and "3rd" by their titles on the map. (If scores are tied for 1st, 2nd, or 3rd, ask which three interest areas the counselee would like to map first. Other combinations can be mapped later.)

2nd. Start at the center of the map and draw a line to the dot for the 1st (highest) interest score. Then draw a line half that length from the dot toward the 2nd highest score. (The line should be as long as the map's hexagon is wide.) The folded edge of a piece of paper can be substituted for a ruler.

3rd. Without lifting the pencil, draw a line half the length of the 2nd line (half the width of the hexagon) toward the 3rd highest score. Mark an "X" where the line ends. Suggest that the counselee look into job families in the map region with the "X" and the regions on either side. (**Note:** This procedure is adapted from one described by Mark J. Miller in the 6/85 *Journal of Employment Counseling.*)

Figure 2. The Fleshed-Out Hexagon (World-of-Work Map)

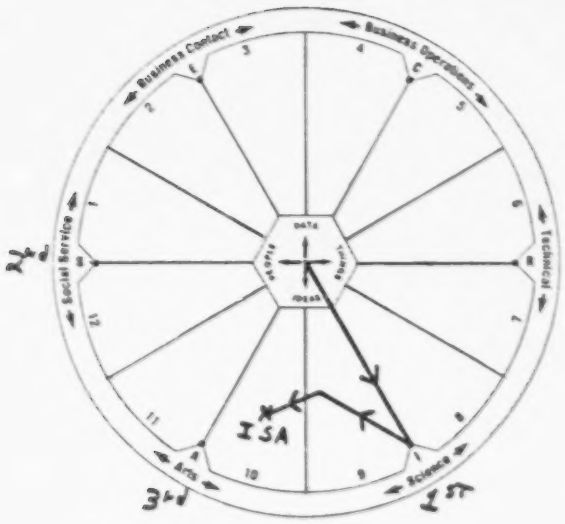


Figure 3. Mapping a counselee's 3-letter code. (Example using the code "ISA".)